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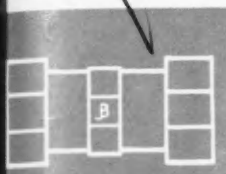

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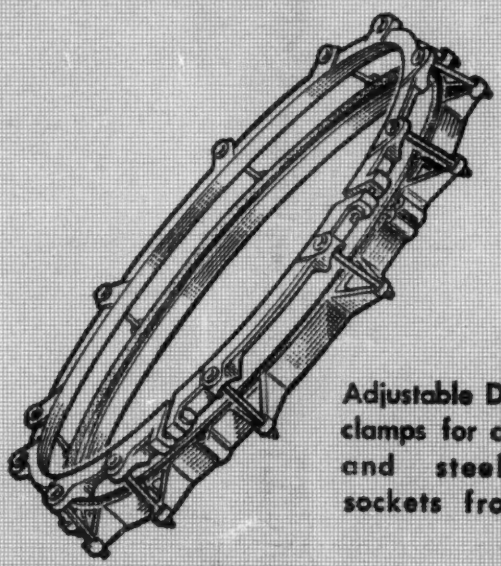

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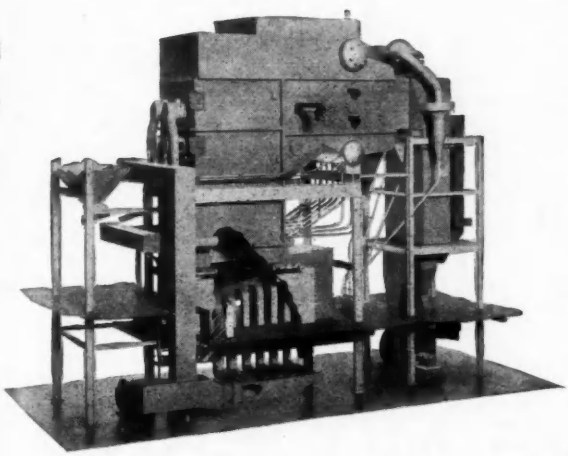

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Gas Journal

VOLUME 307 • NUMBER 5106 • 113th YEAR

WEDNESDAY, JULY 12, 1961

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Editor:
GEOFFREY W. BATTISON

Assistant Editor:
WALTER F. TRUMAN

Technical Editor:
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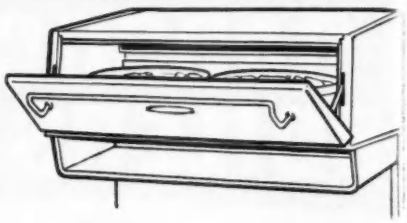

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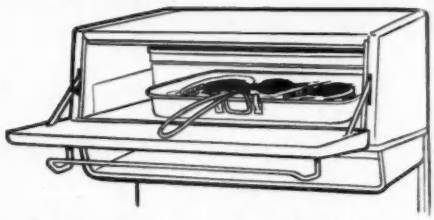

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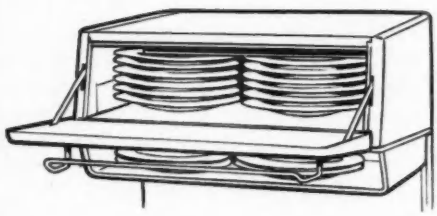

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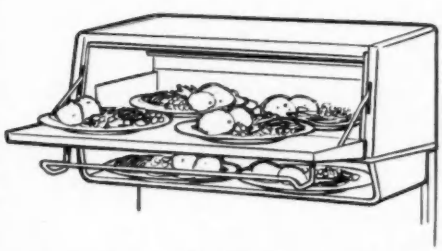

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Gas Journal

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Impressions of Stockholm

THE 1961 conference of the IGU at Stockholm has come and gone, and it is now possible to look back in retrospect and decide for ourselves what advantages may be expected from this and all such conferences.

There can be no doubt at all that the mere coming together of gas engineers from other countries with different problems to solve and different conditions of terrain and weather to contend with, is of the utmost value in the exchange of ideas.

So, too, are advantages to be gained from visiting another country and seeing the conditions of gas manufacture, distribution and utilisation on the spot. It is, we feel, beneficial for delegates and their wives to travel to another foreign capital to live there for a few days without being ordinary tourists.

There is just the barest chance that under these circumstances the way the host country lives, moves and has its being may make some slight impression on the guest from abroad. As an ordinary tourist he is so likely to look upon the foreign country in which he finds himself as a mere summer or winter playground; without understanding the way of life of the foreigner, we think that any gain is slightly more difficult to gauge.

It is unfortunate that foreign languages come to the ordinary Briton with difficulty. This may be due to lack of interest or perhaps a curious inverse type of prestige, but it cannot be doubted that not speaking the other man's language is a great handicap against being able to know him, however well he may be able to speak yours.

Today at the important international conferences the most excellent arrangements are made for the simultaneous translation of any speakers' remarks from the platform in at least three languages. At Stockholm arrangements in the well-equipped, brand new hall, the Folkets Hus, were not only superb, but the natural acoustics of the individual sections of the hall were excellent. This in some ways may have been something of a disadvantage, since it tends to distract the attention of the listener to the translation, when it is still possible to hear the original speaker better than the interpreter.

Granted that the problem of communications inside the hall has been successfully solved, and anyone taking part in any discussion should be able to communicate with the audience, what of the opportunities of doing so and what of the subjects? The sessions which we attended were on the whole lively and as far as we could see there were often more competitors for the rostrum than time would allow, but with subjects of less interest, the vitality of a session was at a noticeably low level.

This is not only a matter to be deplored but reflects to a great extent on the decision of the higher ranks of the Union to call for a paper on these particular subjects. One particular session we have in mind dealt with the measurement of coal density and the tendencies in gas production from coke ovens in Belgium, the carbonisation of low quality coal in Australia and similar topics. Regrettable though it undoubtedly is, gas manufacture from carbonisation is becoming of decreasing interest in many countries and the general theme of this session would be unlikely to whip up any interest outside the respective countries.

On these occasions it would, we feel, be a great advantage if speakers could be 'detailed' or asked to 'volunteer' as openers and subsequent contributors. We understand that this is a procedure adopted at the more important meetings of our own Institution and it works very well. However, on the international scale the organisation of such speakers might be more difficult. We understand that for the New York meeting of the IGU in 1955, many of the British contingent crossed the Atlantic in the same ship, and under the leadership of Mr. W. K. Hutchison, now Deputy Chairman of the Gas Council, some such arrangements for Great Britain at least, could be made.

Now what of the many other sessions where competition for the rostrum was intense? Here we feel that those lucky enough to get the rostrum should not hog it. We detected a tendency among certain leading European delegates—and the British were not always blameless—to dominate the session by persisting in detailing conditions prevailing in their country and perhaps missing the point of what a discussion should be.

The whole object of a discussion, we feel, is the contribution of completely relevant data from a slightly different angle from a previous speaker, or the author

of the paper, to form part of a well-balanced whole. It is most valuable that this should be kept in mind since over-detailing a point of view may well be as disconcerting to others in the hall as is the feeling of apathy or lack of interest in a report or paper of passing importance. Besides when the floor is held by a few, a discussion may well deteriorate into a battle of giants.

Perhaps such an extreme case may not be a very likely outcome, but may we take the opportunity to deplore once more the tendency among speakers even in their own District Sections of the I.G.E. or Junior Associations to write short papers of their own as contributions to a discussion.

Gas distribution

Let us now turn to look at some of the subjects discussed in the various sections. We have referred to coal carbonisation for which the first sectional meeting was assigned. There was an interesting discussion taking place at the same time on gas distribution as distinct from long distance transportation. A paper was discussed in this section dealing with the detection of gas leakage by dogs which was illustrated by an excellent film showing how Alsatian dogs have been trained in Holland to do this. The dogs seem none the worse for the experience, and an amusing shot showed the dog-handler being forcibly dragged into a kitchen and the dog detecting a leaking cooker tap.

Subjects in other sections included the calculation of pipeline characteristics, the supply of heat services by gas in large urban houses, the whole question of gas manufacture by modern processes, including the Lurgi and oil cracking processes, and industrial developments in gas usage.

In a section devoted to underground storage, there were two excellent papers, one from Russia on the use of aquifiers and another from America on storing liquefied gas in caverns. The logical follow-on to this was a contribution by Dr. J. Burns and Mr. L. J. Clark, both of the North Thames Board, on the use of liquid natural gas for town gas supply.

Pipeline film

Perhaps the highlight of this particular session was the showing by the French contingent of a film made by Gaz de France of the experiments being conducted in the laying of the pipeline from Mostaganem on the Algerian coast to Carthagena in Spain. Since this involves laying a main at some 9,000 ft. under the Mediterranean, the problems involved demand the most exacting investigations for their solution. In fact, an article by M. M. Moyal published in a recent issue, explains the magnitude of the work to be carried out.

The film, however, dealt with every aspect of the project, the survey of the sea bed, and the scientific research work needed to approach the project from a standpoint which would have a reasonable chance of success. It would be needless to add that the colour photography was excellent, and the commentary, given in French by a member of the French contingent to the Conference, was also excellent, audible and to the point. But what really impressed us far more was the way Gaz de France was going about it. Both it and the French Government were clearly convinced that, in the exploitation of natural gas from the Sahara and its transportation to Western Europe for use outside France itself, they had the kind of opportunity for commercial greatness rarely granted to a leading industrial country.

That this chance is being taken in both hands is quite clear from the film. The best that science, technology and engineering can offer is being pressed into service and all the skill and ingenuity of the French are being used to the utmost. We in this country might be forgiven if we are a little envious of all this enthusiasm and single-mindedness over a project which is clearly so important to France's commercial future. This film was clearly one of the highlights of the conference, but papers were to follow on other subjects of more than passing interest.

The reduction of carbon monoxide in town gas is a subject which continues to be one of some importance in this country, so it was particularly timely that there should have been a paper on this subject by Mr. F. Jordi, of Switzerland, who is a director of the gas and waterworks at Basel. It was from the Basel works some 2¼ years ago that the first announcement of a town gas virtually free of carbon monoxide was first made.

Organic sulphur content

The author points out that the gas distributed in the city of Basel contains less than 1% of CO and only some 1¼ grains of organic sulphur per 100 cu.ft. In Great Britain our targets seem slightly less ambitious, but at a CO content of 5%, we are certain that the process can be carried out economically, and by using the catalytic methods, as at Basel, the reduction of organic sulphur content to perhaps 3 grains or below per 100 cu.ft. will improve gas quality especially for industrial uses.

There is a great deal more to these conferences than sitting in a hall listening to papers, however eminent their authors may be and however stimulating the discussion.

Visits were arranged for delegates both before and after the conference, but it was unfortunate in many ways that so few of these were anything more than of social or geographical interest. The only pre-conference visit of technical interest was to the shale oil refinery at Närkes Kvarntorp, near Orebro, where the Svenska Skifferolje A.B. extract crude oil, gas and other products from shale. This is one of the biggest shale oil plants in the world, and was in fact started during the war when fuel imports became difficult.

Stockholm as a city, however, has a lot to offer the visitor, and though many more tourists from the British Isles travel to Scandinavia than they did even before the war, Sweden is an expensive country for the British visitor. The exchange rate for the Swedish kronor may well discourage many keen to explore the more remote parts of North Europe, so an opportunity given by the holding of the Conference in this fair city, with its amazing mixture of the new with the traditional, would have been partly missed if delegates had stuck too closely to the business sessions.

OF CABBAGES AND KINGS

BY G. le B. DIAMOND

TO describe the colour, the incident and the drama of life in South-East England during the war years 1940-45 would require a separate and entire volume, so I should like to relate some anecdotes of other gas characters with whom I came in contact.

For many years, Mr. William Cash, senior partner in the firm of Cash, Stone and Company, was not only a leading figure in the accountancy world, but was a revered chairman of gas companies. He possessed a striking personality, somewhat resembling the late Lord Kitchener in appearance. He looked imperative and was so. I have seen him subdue a turbulent meeting by a glance in the City of London.

The gas undertakings over which he presided were exceedingly well run and affluent. One day, to my great surprise, I received an invitation to a luncheon party at the Ritz Hotel, but it was not until coffee time that I became aware of why I had been so honoured. I was invited to accept an appointment in one of his wealthy companies and I was not lacking for a word to accept.

Far from a formality

Mr. William Cash said: 'I have been a life-long friend of Sir David Milne-Watson (who was then my chairman), I should not like to make this offer before I have had a word with him, but you can rest assured it is only a formality.'

It turned out to be far from a formality, for Sir David said firmly: 'No, I will pay him what you offered,' and, as always, Sir David kept his word, but I have often wondered what would have happened if my footsteps had gone off in that direction.

Mr. William Cash became the president of the British Commercial Gas Association and we were all regaled, not only with a feast of oratory but by superb hospitality at Bournemouth. After luncheon, he took the chair and the proceedings commenced on a hot summer afternoon. It was quite frankly a soporific afternoon; one could almost hear the bumblebees among the flowers through the open doors leading to the gardens.

Listening to the droning voice of the speaker, Mr. Cash soon lapsed into deep slumber. After about ten minutes, he leapt to his feet, took his watch out of his pocket, and, to the consternation of the whole assembled party, adjourned the meeting for, as he said, 'We have most regrettably overrun our time.'

That night, Mr. Leslie Burgin, the Minister, proposed the toast of the gas industry with these opening remarks: 'Gentlemen, I understand that this afternoon you have been afflicted with a complaint that has been with mankind through the ages. Your "cash" ran out too soon.'

Mr. H. James Yates, chairman and founder of Radiation, reigned in imperial splendour, but with graciousness and good taste at Sandgate in Kent. As a young man, by fortuitous circumstances, I was able to perform some trifling service for Mrs. Yates in her last illness. Mr. Yates never forgot this, and every year my wife and I were invited to meet a small company of Mr. Yates' friends at a luncheon party at Sandgate.

The meal was impeccable and served on silver plates. I can see now the view, on a winter's day, looking over the English Channel with the sunlit garden running down to the sea, landscaped to resemble the formal gardens of Spain with pantile-capped white walls.

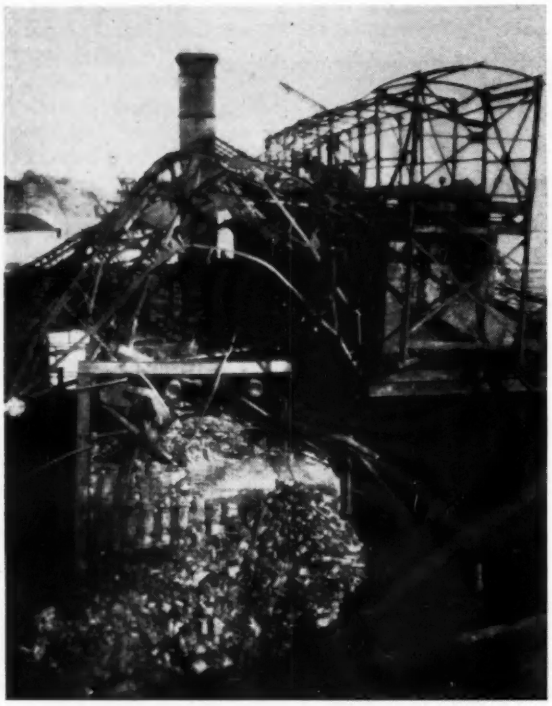
This was not the only Mediterranean effect, for sometimes Mr. Yates would be adorned with a cloak and a flat black hat which, at a glance, closely resembled a famous wine advertisement. We spent many happy hours looking at his priceless possessions.

Henry Woodall, of the renowned gas family, lived in a spacious and very fine house at Yotes Court, Mereworth, near Tonbridge, and prided himself justly on his flock of black sheep, about which he knew a great deal. He was deputy governor of the Gas Light and Coke Company and the chairman of many gas undertakings, including the British Gas Light, with stations in many parts of the country, but in particular in East Anglia.

He was always very nice to we younger men but had a disconcerting way of requiring one's immediate attendance at Yotes Court at highly inconvenient times. He was always very thorough in everything he did and wanted to be kept informed very closely about progress of events.

These visits to Yotes Court were for the purpose of elucidating something that might prove troublesome at a board meeting. He was a man of courage and, during the last war, demanded a personally conducted tour of Dover in order to experience the shelling. He came provided with a magnificent hamper containing a brace of cold pheasants and a bottle of wine.

We sat all day in the car on a suitable place of vantage near Dover Castle waiting for the shells, but none came, and he returned to Yotes Court that evening a



The Rochester, Chatham & Gillingham Company's gasworks on October 8, 1940.

very tired and disappointed man. I have often wondered what Sir David would have said if he had known of this excursion, for he was very fond of Mr. Woodall.

Stephen Lacy, the brilliant distribution engineer of the Gas Light and Coke Company, deserves also to be recalled. In appearance, handsome—in gesture and manner, slightly oriental; he was immensely industrious and would commence work before breakfast in the morning, his faithful clerk, Mr. Brown, having brought the letters from the office so that they could be attended to without loss of time while the journey was made to Horseferry Road.

Formula his memorial

His formula for gas flow in pipes and his practical application of mathematics to distribution remain his memorial. He and his charming wife used to visit us in East Kent on occasions, and once he asked for permission to sit all day in one of our showrooms in order to study the reaction between the consumers and the showroom staff. Unhappily, he came to an early death.

There was one who shall be nameless, whose laudable objective in life was to sell gas cheaper than anyone else. He did not quite reach his target although he made a valiant effort to do so. The late Mr. F. M. Birks, on being told the price at which gas was being sold on that district, said: 'It is ridiculous, you cannot make it for that.'

The modus operandi was to buy up all the house coal sweepings from the coal merchants' yards in East Kent at a knock-down price and to make up the balance with some cheap coal from the Kent coalfield. By modern standards the works were in a shocking state of maintenance, but the gentleman in question did give good consumer service and a remarkably low-priced gas.

If you had occasion to call upon him at the works you would be confronted with a fantastic scene which, at first sight, might appear to be sheer buffoonery. You would be invited to scale a ladder and get through the window of his office in an upstairs room.

But there was a reason for it all, for the stairs had fallen down with dry rot and it would cost too much to put them back again; hence the ladder to the window, a makeshift which was in existence for nearly a year.

A noted citizen of Hastings, Mr. C. F. Botley, was for many years engineer and manager of the town's gas undertaking and, if my memory serves me right, the St. Leonards Pier Company, to say nothing of the chairmanship of many charitable organisations.

An individualist

Mr. Botley was born into the gas industry, for his father and his grandfather before that had run the Hastings gas undertakings. He built the Glyne Gap gasworks, between Hastings and Bexhill, and shut down the gasworks in the middle of the town. He was an individualist of unusual appearance, carrying a high colour on his cheeks, a drooping grey moustache and a very high collar with two sharp points which made him hold his head erect; the whole ensemble was surmounted by a little black bow.

When he decided to sell that portion of the land no longer required for the gasworks in the middle of the town, he sold it in small parcels, keeping the gasholders, the station meters, the governor houses and the fittings shop in existence.

Town of make-believe

The consequence was a strange town of make-believe in the middle of the gasworks (it is still there). There was, for example, a public house near the meter house and a timber yard adjoined the gasholders.

Mr. Botley gave long and distinguished service to the gas industry and was president of the Institution. He was never at a loss for a word, and spoke wisely on a variety of subjects, but a visit to his own undertaking indicated that he did not always practise what he preached.

After a colourful journey through life the time came for him to retire, and it fell to my lot to arrange a presentation to him on behalf of all his colleagues. We did not relish this event, for we thought that Mr. Botley would probably break down on leaving and there would be a painful scene.

When I asked him what he would like for a present he said: 'A dressing case.' So I took him to make the appropriate selection. We all went to the Star Hotel at Maidstone on the day and the presentation was made.

Mr. Botley was the life and soul of the party, great good humour twinkled from his eyes, and we were all rather taken aback. In point of fact we did not know that he was going to get married again, and actually did so on the following day, which was why he wanted the dressing case.

Leonard Langford, of Tunbridge Wells, was a perpetual source of entertainment. Possessed of great bonhomie and a devastating wit, he carried all before

him, and even his board meetings are said to have lapsed into hilarity.

If I am not mistaken there are still some who remember the repartee with the Crazy Gang at the Victoria Palace one night. He was immensely popular and, like his brothers, gave outstanding service to the gas industry.

Charles Valon Bennett, of Rochester, also came from gas stock, and ran his undertaking supremely well. A little severe in demeanour perhaps, he was one of the few people who did not greatly relish the idea of having Sir David Milne-Watson as his chairman.

He never really quite got over this, and there are many anecdotes of the consequences that followed from this incompatibility of temperament.

He was to die in tragic circumstances of the traditional broken heart. His works were bombed; he took me to look at them and returned home to die the same night.

Mr. Barnett, the engineer and manager of a very small undertaking in mid-Kent, with works at Snodland, was a notable character in many ways, immensely industrious and of great heart. He, too, supplied the consumers with a reasonably-priced gas, backed by good consumer service, in a widely-dispersed rural area.

Working in nine days

In the early days of the war, a land mine fell on his works and they were completely demolished. Anyone who saw the sight could have come to no other conclusion than that that was the end of gas production for the Mid-Kent Company.

But not at all, it was working again in nine days' time and producing some gas. Mr. Barnett was on his works within minutes of the occurrence. When firemen from the local fire service ran to report that they could not get the fire engines out of the station because the doors were jammed, Mr. Barnett, standing on a heap of rubble, commanded: 'Chop the Pygmalion doors down,' and chopped down they were.

He lived by willpower and was quite frequently found unconscious in a pool of blood from an internal haemorrhage which eventually caused his early death.

Two thousand shells and many hundreds of bombs fell on Dover during the war. The shells were by no means small, being about 4 ft. in height and 15 in. in diameter; the detonation of each was something one does not forget. Mr. R. G. A. Clerk, the engineer at Dover, and his wife, endured the lot with unsurpassed courage and a never failing fountain of cheerful optimism.

Many times have I thought that his outstanding service to the industry was but imperfectly grasped and never sufficiently recognised.

During the war years there was an unusual and quite serious explosion in Dover when a disused brick culvert running along one of the main streets blew up. The cause was mercifully ascribed to enemy action, although we thought rather differently.

Soup and bully-beef

It was always our custom to give workmen engaged on tasks of this kind hot soup and bully-beef with biscuits during the night, but on this occasion the bully-beef could not be found.

A 14-lb. tin was eventually tracked down, which Mr. Clark, with my assistance, attempted to open by means of a screwdriver, the only tool we could put our hands on. It ended in an all-in wrestling match on Mrs. Clark's best carpet before we got the meat out of the tin.

It was in Dover that I came across old George Anderson who, for many years, had been managing director of that undertaking. He came of a family who possessed considerable interests in gas companies operating in Spain and Ireland.

Young men of today will find it difficult to realise that at one time quite a number of the principal gas undertakings on the Continent were in British hands. There were, for example, the activities of Mr. A. F. Phillips, who had a majority interest in the gas undertakings at Turin and Milan, while in an earlier generation, so I was told by Mr. Paddon, Henry Dupre Labouchere, the great journalist and politician, had an interest in the gas undertaking at Vienna.

But to go back to George Anderson. He was a good practical engineer with a keen sense of good financial management. Like many before him in the gas industry, he seemed to possess a recipe for the elixir of life, for he remained looking youthful and mentally alert to a ripe old age.

He thought very highly of Patterson, the engineer at

The Mid-Kent Gas-Light and Coke Company's works at Snodland on February 21, 1941 . . . . . 'it was working again in nine days and produced some gas'

Ramsgate Corporation Gas Department's works on August 24, 1940 . . . . . 'the first gasworks to be bombed flat.'

Dover, but found him difficult to control and almost impossible to extract information from. It used to be said that when some long overdue return was vitally necessary George Anderson would write a letter commencing: 'My dear Patterson, you really must send me this return by tonight's post.'

The return was not forthcoming. The next letter began, 'Dear Patterson,' the next 'Dear Sir,' and the next 'Sir.' Finally there would be a telegram: 'I demand the return and I'm coming down today to get it.'

Further along the coast was Harry Ruthven, of Ramsgate, a pioneer in the installation of the vertical chamber oven and an uncrowned king of Ramsgate. He was very popular with all his colleagues and was a dedicated gas man.

He enjoyed the unenviable reputation of having the first gasworks to be bombed flat in the Second World War. Here was chaos indeed, and yet he rose triumphantly, like the phoenix out of the ruins, and immediately began reconstruction.

The purifiers had gone, and with great ingenuity he built a new set of cast iron standard tank plates. They have, in fact, only recently been demolished. It was while with him one day, looking out of his office window over the adjoining churchyard, I was astonished to see that a great heap of coke had spilled over the wall.

I said: 'My dear fellow, there will be a most appalling row about this. You will have the Ecclesiastical Commissioners after you.' He replied: 'It's quite all right, I pay them a rent for storing coke.'

I have never heard anyone utter an ill word about Thomas Hardie. He was to be one of my directors for a time in the South-Eastern Gas Corporation, and every year Mr. and Mrs. Hardie used to come down to stay at Folkestone.

What delightful people they were and what a fund of entertaining engineering stories Mr. Hardie had to relate. I can almost see him now lapsing into the 'Geordie' and laughing with boisterous good humour.

An uncanny eye

He had an uncanny eye for anything that was not quite right on a gasworks, and would unerringly spot it. One day he came to see me in Rochester. It was only late in the afternoon I made the discovery that he had lost his house by bombing the night before, and the clothes he was wearing had been lent to him by a neighbour.

Fancy keeping an appointment in a circumstance such as this. He was to triumph over even greater difficulties before the end of his life, and left with all of us who knew him an abiding admiration and affection.

We have had to be versatile in our time, and I came very much in contact with the public lighting world, of which one of the outstanding leaders was Winstone, public lighting superintendent of the Gas Light and Coke Company in London, an individualist, dynamic, resourceful and vastly entertaining. It was a delight to know him.

It is probably true to say that the public lighting by gas of London in Winstone's day reached its zenith. After working all day in his office, night after night he would visit some part of the metropolis to look at an improvement in lighting standards or some feature that had been put up for his examination.

This nightly perambulation of the metropolis gave him an unexampled knowledge of London and its night life, and he was a repository of odds and ends of information about London history or its buildings which were of never-failing interest.

Never in the Abbey

I said to him one day: 'You have passed Westminster Abbey every day of your life on the way to Horseferry Road. Now tell me you have never been in it!' He replied: 'I never have.' His son became the well-known dance band leader.

It was to Winstone I owed my introduction to the late George Keith, chairman of Keith, Blackman, the London engineers who made the Keith high pressure gas lamp. If I am not mistaken, George Keith was educated at Cambridge and obtained an honours degree in the mechanical sciences tripos.

He had, however, a great flair for practical engineering and was an inventive genius. When he brought out the so-called Banjo high-pressure gas lamp, I had several of the first for experimental purposes at Folkestone. George Keith came to see them alight and brought with him his wife in the Rolls-Royce.

We all went to see the lamps. The chauffeur got out a pair of overalls, which George donned, and then proceeded to climb the ladder to the lamps in order to make some adjustments. Onlookers gaped, for it was an unusual spectacle to see a 'mechanic' get out of a chauffeur-driven Rolls-Royce.

He served the gas industry well, and I still think that the illumination from a well-installed and well-planned high pressure gas lighting unit is excellent, although unfortunately the cost of maintenance has rendered this system of lighting uneconomic.

● **UPON RETIREMENT I look back on a cavalcade of years that have been momentous in our time, and have enjoyed my service with the gas industry immensely. There has been a lot of hard work, but there has been a lot of fun too, and I am grateful for the good fellowship that has been so generously extended to me by so many.**

● **SO MUCH FOR pleasant reminiscences. What of the future? With the colourful characters I have mentioned, many of the old ways of working have also disappeared. I do not have to tell readers of this journal that a new era for gas is opening up, and I see no reason why our old industry should not have a future as successful and enterprising as its past has been.**

● **AREA GAS BOARDS are large organisations, with many workers scattered over a wide area, which complicates the problem of maintaining good internal relations with management. The industry has, however, inherited a fine tradition, and there is no reason to think that morale has suffered so far because of nationalisation.**

● **THE INEVITABLE TENDENCY towards a more functional organisation in all Boards requires watching in this respect, for any decline in morale could be fraught with grievous results.**

● **OURS HAS ALWAYS been a 'human' industry in which regard has been paid to the status and dignity of the individual. Let us hope that it will always have this proud record, for success should be measured not only by the balance sheet, but in terms of human happiness and well-being.**

Coal and coke testing

WHEN the revision of B.S.1016:1942 was started, it was decided to formulate the tests carried out on coal and coke in the same terms wherever possible, to avoid unnecessary duplication of descriptive matter. This object has been achieved in many of the parts already published, while in the others the methods have been described separately but in similar terms.

British Standard for the analysis and testing of coal and coke: Part 13: Tests special to coke (B.S.1016: Part 13: 1961) is unique, however, in that most of the tests described have no counterpart for coal.

The methods set out in B.S.1016:1942 for the determination of shatter index and abrasion index have been improved both in apparatus and technique.

Copies of the standard may be obtained from the British Standards Institution, Sales Branch, 2 Park Street, London, W.1., price 7s. 6d. each. (Postage will be charged extra to non-subscribers.)

Trade Publications

'Town Gas by the P.G.-Hercules Process' is the title of a new leaflet which describes, with a diagram, the process itself and considers efficiency, and construction of the plant.—*P.G. Engineering Ltd.*

★

Oxley Engineering Co. Ltd., has issued a brochure printed in German, which has been prepared for distribution from the Oxley stand at the Leipzig Fair.—*Oxley Engineering Co. Ltd.*

★

'Saxon Screens' is the title of a booklet published recently. Heavy duty vibratory screens, resiliently mounted vibratory screens, reciprocating screens, and complete screening, handling and storage installations are all described with photographs of various installations.—*Saxon Engineering Co. Ltd.*

★

A booklet has recently been published entitled 'Complete Project Engineering and Erection Services'. Copiously illustrated, it describes the services provided by the Company, through design, civil engineering, structural engineering, plant erection, pipework, mechanical equipment erection, instrumentation engineering, electrical engineering, and testing, reconditioning, and maintenance.—*The Power-Gas Corporation Ltd.*

★

The Power-Gas Corporation Ltd., has issued recently a leaflet on the subject of 'Desulphurisation of Industrial Gases Using the Giammarco-Vetrocoke Process'. This process provides selective removal of H_2S, possibility of operation over a wide range of pressures and temperatures, removal of CO_2 down to .5% and of H_2S to less than 1 ppm. in a single stage, direct recovery of elemental sulphur as a by-product, freedom from corrosion, relative freedom from undesirable side reactions and low capital and operating costs. The leaflet deals with the use of arsenite, sulphur flotation, capital and operating costs and utility costs per day.—*The Power-Gas Corporation Ltd.*

★

Turner Brothers Asbestos Co. Ltd., has prepared two new publications. The first, entitled 'Aluminised Asbestos Cloths', publication AA67, has fitted into it a sample of one quality of this aluminised asbestos. This material is easily installed, either sewn or with adhesives. It may be applied over primary insulation or fabricated into mattresses, and may also be used for heat protection of equipment or personnel. 'Rubber Conveyor and Elevator Belting' publication BA 79, outlines beltings designed specifically for the iron, steel, foundry and coke industries, and special reference is made to belting carcases, types available, synthetic-fibre carcases, and Turner's conveyor belting service.—*Turner Brothers Asbestos Co. Ltd.*

Eighth International Gas Conference meets in Sweden

STOCKHOLM, with its mixture of Baroque and modern buildings, its busy water front—it is the largest port in Sweden—its fast-moving but well-disciplined traffic, its excellent restaurants, its fly-overs and its pedestrian traffic lights, was a wonderful setting for the Eighth Conference of the International Gas Union recently held under the Chairmanship of Herr Bengt M. Nilsson of the Swedish Gas Association, its President, in the Folkets Hus, the new hall incorporating the city's theatre, Stadsteartern.

This hall was remarkable in many ways, not only for its design and what it was able to incorporate under one roof, but for its adaptability in being able to divide itself into three smaller halls, suitably equipped for sectional meetings. The speed with which this sub-division could be carried out was surprising—the operation appeared to take about half an hour—so that there was no delay between the end of the plenary session and the sectional sessions in which the meeting was immediately able to get down to its real business.

The scene in the undivided hall when Herr Nilsson declared the conference open was given a dramatic turn by the sounding of a fanfare by the trumpeters of the Royal Swedish Navy, posted at the four corners of the stage. This moment of ceremonial was to give way almost immediately to something far simpler, but none the less effective and equally telling in its unexpectedness.

The sound of unaccompanied violin music was heard off stage; this was followed by the entrance of four violinists, dressed in Swedish national costume, playing folk music in harmony. The effect of these four men, each representing a Swedish province—two in the dress of Delsbo, and one each in that of Wästmanland, and Mora in Dalarna, was to add at touch of unreality to a sophisticated gathering of leading gas engineers, hard-headed men from many industrial countries throughout the world.

It was a pleasant interlude, and the reaction of the audience was immediate. The quartet responded to the applause, and disappeared, playing themselves off the stage almost as unexpectedly as they had appeared.

The President of the City Council of Stockholm, in a short address of welcome to the 650 delegates and 300 ladies attending the conference, hoped that as well as finding the locality a 'stimulating milieu and propitious to efficient results they would have ample opportunities for establishing or resuming contacts with Stockholm, its nature, its culture and its people.' The former was typical of a waterside town, while its culture was the result of human activities over seven centuries.

The President regretted that the Patron of the Conference, the Duke of Halland, was unable to be present owing to illness, but he sent his good wishes for the success of the meeting.

Mr. G. Agrenius, Commissioner of the Industrial Department of the City of Stockholm, in a speech of welcome in which he dealt with the energy balance in Sweden, pointed out that the international statistics of the gas industry issued at the conference showed that in many areas the number of consumers had increased considerably and that total sales had increased still more. In the meantime the number of undertakings had everywhere been slightly reduced which indicated a successfully performed

rationalisation. Furthermore, there was today a rich variety of raw materials such as coal, oil, light naphtha and natural gas. Those observations were particularly applicable in the United States, Great Britain, France, U.S.S.R., Canada, Western Germany, Austria, Belgium and the Netherlands.

In other countries the situation was quite different. The gas industry had been developing only slowly, or in some cases even contracting. This was the case in Norway, Finland, Switzerland, and Sweden. Those countries had a few things in common. They had good or, as far as Norway was concerned, abundant assets of water-power. Within their boundaries they had negligible quantities of coal, oil or natural gas. Their requirements of these fuels had to be imported. It would be of some interest to them to have a survey of the Swedish energy situation.

The total demand for energy was going up at a rate of 2.5% to 3% annually. However, the different kinds of fuel showed very different developments. The consumption of electricity showed a steady increase of about 6.5% per year, which meant doubling every 11 years. This was probably an internationally applicable figure. Swedish production of electricity was today 4,700 kWh per capita. In this respect they were on the same level as U.S.A. and Canada and second only to Norway, where they had almost twice the consumption per person.

District heating

Until the second world war Swedish electricity production was almost entirely derived from water power. It still dominated but was filled out by a growing contribution of steam power. In almost all housing areas in cities erected during the last 10 or 15 years there was district heating. The district heating equipment in such plants was sometimes combined with back-pressure turbines for generating electricity. The fuel was almost exclusively oil, mostly heavy oil.

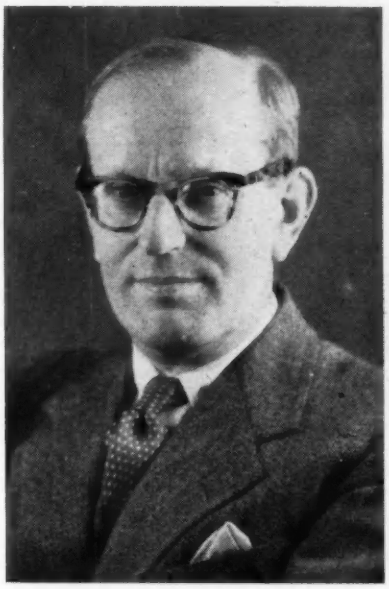
As to the import of fuel the quantity of oil that was very moderate before the war had grown rapidly and now dominated completely. The importation of coal and coke had been reduced correspondingly. Their annual consumption of oil per capita today was the biggest in Europe and in that respect they were second only to U.S.A. and Canada.

Such was the background of the difficulties and setbacks the gas industry had suffered during the last 15 years and from which it was now slowly but surely recovering. In all fields gas had to compete with cheap oil and not too expensive electricity. The coke market that hitherto had been confined to house-heating, had had to sustain all kinds of hardship from oil. Wages had gone up faster than it had been possible to raise charges. The last must be a very well-known phenomenon.

Works reorganised

In this situation it was necessary to do something, and several things had been done. A few of the very small gasworks had been closed down. The remaining works had been reorganised and rationalised to keep step with or outrun the rise in wages. Gasification of oil or light naphtha had been introduced in a few places and was contemplated in others in order to complete or substitute the gasification of coal. Owing to very good technical achievements and good salesmanship it was possible to sell coke for metallurgical purposes to steelworks in competition with imported coke.

New demands for gas had been created, such as district heating of one-family houses that could easily be connected with other kinds of heat distribution. An increasing interest was also felt from big and small industries—handicrafts, restaurants, bakeries, and so on.



Mr. J. van Dam van Isselt (Netherlands) who succeeds Herr Bengt M. Nilsson (Sweden) as President of the International Gas Union.

Thus it was hoped that the crisis for the Swedish gas industry had passed. In the long run this must be a natural thing because gas as fuel was efficient, clean, easy to handle and had a high heating value. Everyone believed in a future for the gas industry even there in Scandinavia.

Mr. Agrenius was followed by Mr. Neuerburg, President of the Gas Committee of O.E.E.C., Paris, who, invited to address the conference, said that the fact that more and more natural gas had been found in several countries and that the quantities of different gases provided by oil refineries had been growing continuously could certainly be considered as the main causes of the rapid revival of the gas industry in latter years.

The possibilities for a further expansion of the industry posed many problems for which the solutions were not always easy. The answers could only be found by close co-operation. Close co-operation implied the existence of organisations. Next to the national organisations, international ones were needed. Next to the professional ones, governmental ones. Personally he had always been of the opinion that the main job should be done by the professionals and that in general governmental interference should not go any further than necessary for supervision, co-ordination and stimulation of the work to be done.

Concluding, Mr. Neuerburg said: 'Of the international organisations dealing with gas problems, yours, Mr. Chairman, is the oldest and, without doubt, the most important. Noblesse oblige. The long list of outstanding reports, which are to be discussed and examined in your meetings, shows that the International Gas Union is fully aware of its duty and that the Union intends to continue its splendid way of working, which has become traditional.'

Finally the Chairman, Herr Nilsson, summarised the evolution of the gas industry and the work done by the Union during his presidency and gave a short account of the papers presented. He then wished his successor, Mr.

Folk music was provided by these four violinists each of whom was dressed in the national costume of a Swedish province (län).

J. van Dam van Isselt (Netherlands), an equally profitable term of office.

Among the official delegates to the Conference, representing Governmental organisations were: Mr. K. Neuerburg, President of the Gas Committee of O.E.E.C., Paris; Dr. G. Koranyi, Vice-President of the Working Party on Gas Problems, E.C.E., Geneva; Mr. L. Corradini, Director of 'Other Sources of Energy' E.C.S.C., Luxembourg; Mr. E. Klönne, Director of Technical Services O.E.E.C., Paris; Mr. J. A. van den Heuvel, Head of Energy Division, Direction of Technical Services O.E.E.C. Paris, and Mr. P. O. Kjellström, Chief, Coal and Gas Section, Energy Division E.C.E., Geneva.

Non-governmental delegates

Those delegates representing non-governmental organisations, were: Sir Henry Jones, World Power Conference, London; Mr. R. H. Touwaide, Union of International Engineering Organisations (U.A.T.I.), Paris, and Mr. Hugo Mansson, International Union of Producers and Distributors of Electrical Energy (Unipede), Paris.

The opening session over, delegates got down to the business of the conference and in plenary session discussed the reports of the different Committees of the Union. This and the following sectional meetings will be referred to in more detail later, but we feel that it would be fitting to make some reference to what we would describe as the 'extra-mural' activities of the delegates.

From the opening of the conference to its closing the weather was brilliant and at times almost unpleasantly hot. This gave encouragement to sightseeing and the enjoyment of the many things Stockholm has to offer the tourist, but the official entertainments were so outstanding as to merit inclusion in our account of the conference.

The City Hall in Stockholm, Stadshuset, is a building of quite remarkable appearance and is probably well-known all over Europe. It was in this building of warm red brick, and gilded mountings, with its copper roof, and its two immense reception halls, that the City entertained some 1,000 people—delegates and their ladies—at a reception on the day preceding the opening of the conference.

It was also the scene of a banquet and dance organised by the Union for its delegates towards the end of the conference.

Built to the design of the well-known Swedish architect, the late Ragnar Ostberg, it may be described as in the modern classical style, with a noticeable Italian influence. Completed in 1923, it stands out as a landmark on the shore of Lake Mälaren on the west side of the City and is one of the first buildings to be seen by the traveller arriving in Stockholm by train from the south or west.

Of its two main public rooms, the Gyllene Salen—the Golden Salon—in which the reception was held, is immense with gilded mosaic covered walls and a grey stone floor. So well proportioned is this and Bla Hallen—the Blue Hall—in which the banquet was held, that the effect of size is quite forgotten. In fact, the lighting of the Blue Hall gives the impression of being out in the open air.

Here then was the setting for a reception which was remarkable for its hospitality, but with no speech making other than a brief description of the building.

The highlight of the banquet was undoubtedly the grand march of the waiters and waitresses, led by a band, bringing in the pudding. With a staff of at least 50, this was indeed an impressive sight.

But perhaps the most notable entertainment of all was the visit to the Island of Drottingholm to attend a performance of Perogolesi's opera 'Il Maestro di Musica' in the small theatre which is part of the Royal Palace on the Island.

This theatre, built towards the end of the 18th century, is virtually unchanged since that time, and the machinery connected with it, the means of producing sound effects and the seating, are those originally installed. The stage is unusually deep, going back some 60 ft. from the auditorium.

The party of delegates left Stockholm in two ships at 7.0 p.m. and 8.0 p.m. respectively, and the latter sailing westward up Lake Mälaren was able to see the City Hall, the Church of the Knights of the Order of the Seraphim with its lace-like iron spire, and other buildings of the old city 'between the bridges' lit up in the evening sun.

The romantic elegance of the 18th-century theatre was accentuated by the small orchestra dressed in the clothes of the time, including wigs—the conductor was very elegant in strawberry-coloured satin knee-breeches.

The performance, given by members of the Royal Opera from Stockholm, was of a very high order indeed.

At its conclusion, while the audience took refreshment in an anteroom, a lute player entertained them. Perhaps here, too, the tradition was being maintained, and the conference delegates were playing their part as the Swedish King's guests had done in the past.

At the final plenary session of the conference, held in the

Swedish Naval trumpeters sounded a fanfare as the Conference was declared open. Herr Nilsson was about to make his opening address.

Folkets Hus, Herr Nilsson thanked the various committees for their valuable work and pointed out how helpful the discussions at the various meetings had been on the decisions reached.

He also announced the publication in the near future of the dictionary of the gas industry in seven European languages and hoped to extend this to other languages spoken by members.

He thanked U.N.E.S.C.O. for the financial help received for the publication of the Union's transactions and the reports.

Finally, he thanked the interpreters who had provided simultaneous translation in four languages, including Swedish, throughout the whole proceedings, and at times a fifth language, Russian, when it had been called for.

Sir Henry Jones, Chairman of the Gas Council, followed and pointed out that as well as being a delegate from the British gas industry, he was also the official delegate of the World Power Conference.

He stressed the value of this body to the world's gas industries and said that many papers were contributed by the gas industry to its meetings. It should be treated with the importance it deserved, since it was able to give the overall picture of fuel and power needs and how they may be satisfied in different parts of the world.

As the importance of the gas industry widened—Great Britain might well be importing natural gas in the foreseeable future—so the range of subjects to be discussed at international meetings widened too. The standard of the discussions had been high and he congratulated the President on the tremendous success of the Conference and its very high standard of organisation.

IGU SWEDEN—
'Gas Journal' Abstract

PLENARY SESSION

Review of Technical Sessions

IGU/1-61 International Gas Industry Statistics.
Report by the Belgian Association.

IGU/2-61 Harmonisation of Essential Clauses in the Specifications for Stamping Gas Appliances.
Report by the International Committee.

IGU/3-61 Study of Gas Distribution Techniques.
Report by the International Committee.

IGU/4-61 Study of the Interchangeability of Gases.
Report by the International Committee.

IGU/5-61 Study of Safety Conditions in Domestic, Commercial and Industrial Gas Installations.
Report by the International Committee.

INTERNATIONAL STATISTICS

THIS is the fifth report of the international statistics of the gas industry for which the Belgian Gas Association is responsible, other reports having appeared at conferences in 1949, 1952, 1955 and 1958.

Mr. R. H. Touwaide (Belgium), the rapporteur, presenting the report, called attention to the figures relating to Great Britain, which in every case should be increased a thousandfold.

He expressed his thanks to the Economic Commission for Europe for permission to reproduce *in extenso* the summary table of gross production of gas and net total available from its Annual Bulletins of Gas Statistics in Europe, which rendered the present report the most complete document on gas industry statistics throughout the world.

STAMPING OF GAS APPLIANCES

Mr. Kec (France) the rapporteur, presented the report of the international committee and pointed out that it represented a complete revision of the previous documents submitted to the New York conference in 1955.

Four fresh clauses had been studied which covered appliances adaptable to different gases, appliances to operate on a sealed circuit, safety features and the stamping of appliances as a result of practical culinary tests. The difficult problem of harmonising test procedures was going to be tackled as part of their future programme.

NEW GAS DISTRIBUTION TECHNIQUES

The I.G.U. Committee presented its first report at the 7th International Gas Conference in Rome, 1958. Since its publication, the terms of reference have been extended and the second report gives details of development since 1958 in the use of new materials and new methods of using traditional materials, and recommends codes of practice in these connections.

Special studies have been made relating to service governors, gas dehydration, fracture of cast iron mains, new methods of laying mains and services, new methods of repairing mains, and calculations of pressure losses in mains. Progress in cathodic protection is being kept in mind, but since this study has now been separately undertaken by the German Association of Gas and Water Engineers, no direct investigations are as yet being carried out by the Committee.

Increasing use is being made of copper and plastic materials for gas service pipes. The latter material has serious limitations if used for the conveyance of gases containing high concentrations of aromatic hydrocarbons. Improved standards of distribution practice are being achieved in several countries by adherence to codes of practice and official recommendations.

The development of high pressure long distance distribution of gas is leading to the growing use of local distribution systems operating at medium pressures, and codes of practice concerning installation, maintenance and

The President, Herr Nilsson, addressing the opening session. The modern design of the hall is at once apparent, and the positioning of the blocks of seats indicates the way in which the hall is capable of sub-division into smaller halls.

operation of district and service governors are vital in the interests of public safety.

For long distance transmission, there are definite advantages to be obtained by gas dehydration. Certain special measures may be necessary in such cases to cope with drying out of joints and prevention of leakage.

Certain general trends have been noticed in studying causes of fracture of cast iron pipes, among which is the comparative vulnerability of such pipes when of small diameter. A recommendation is made to discontinue the laying of cast iron mains having diameters of less than 4 in. (10 cm.).

Attention is called to the availability of several new machines for the installation of new gas distribution systems, leading to savings in time and capital costs as compared with traditional methods. Brief notes are given on the recent Russian development of fabrication of pipe lines from flat strip material in steel or aluminium, followed by pneumatic inflation to produce a round tube.

DISCUSSION

DR. J. BURNS (Great Britain), the rapporteur, presenting the report, referred to the difficulties usually encountered when using the conventional materials, steel and cast iron, for gas distribution. Many faults occurred resulting in leakages and consequent accidents. The use of other materials was proceeding including aluminium, copper and plastics, the latter being in use in Holland.

He was of the opinion that plastic tubing was not completely satisfactory because of its liability to attack by aromatic hydrocarbons present in town gas, and a great deal more work had to be done on this. The tendency to try out other materials had a most stimulating effect on the manufacturers of ferrous tubes, who were now making available a far better material than hitherto.

The analysis set out in the report might not be agreed by everyone, but it did at least represent the general experience of those investigating the problems under review.

Other speakers included MR. J. E. DAVIS, S.E.G.B., and M. DELSOL (France). Mr. Davis amplified slightly the conclusions on the non-ferrous materials referred to and spoke of tubes up to 4 in. diameter in use in his Board. Jointing had been easy and corrosion absent.

Referring to the concentration of aromatic hydrocarbons in town gas, he pointed out that only when this reached about saturation point that trouble was experienced, and for pressures below 30 p.s.i. there was little fear of attack at ordinary partial pressures of these hydrocarbons.

M. Delsol recalled that plastic materials had been studied for a number of years in order to discover their suitability for use by the gas industry, and which particular properties should be eliminated. Unfortunately nothing of real interest to the gas industry had so far materialised.

Tests had been begun on the properties of tubes not only of plastics but of other materials also. These had been satisfactory, and he hoped they would benefit members.

He invited members to come and inspect their laboratories and to see the installations for themselves.

Replying, Dr. Burns stressed the value of competition among manufacturers in stepping up the quality of tubes available, and pointed out that protected high quality steel was a better material than any other. Its price was comparable with the best plastic.

INTERCHANGEABILITY OF GASES

The Report is a long and detailed communication divided into four sections relating respectively to: (1) Definition of interchangeability and specifications for ensuring trouble-free combustion of gases within the range of interchangeability. (2) Details and comparison of methods of determining interchangeability. (3) Standardisation of gas quality in different countries. (4) Proposals for the uniformity of test gases to be used for the examination of appliances.

If a gas can be replaced by another, in an appliance with the same thermal output, and maintain trouble-free operation without any alteration in appliance or gas pressure, this is understood as the interchangeability of gases.

Owing to the significance of the Wobbe number as the most important factor of interchangeability, rules or standards should specify the Wobbe number with its permissible range, which should be kept within the smallest practicable limits.

There are several proposed methods for the determination of interchangeability characteristics and these show points of qualitative agreement but sometimes show also great quantitative differences; for instance, the correlation of Wobbe number with maximum flame speed is only approximate and partly explicable by the complicated relationship between stability phenomena and maximum flame speed.

The slight interrelationship between the quantities employed on the one side, and the widely diverging rules (shape and position of interchangeability regions) on the other, render it difficult to unify the requirements given in the different methods. Some of the causes for this lie in the different constructions of appliances used, and others can be found in the divergent methods of testing employed.

On universal standardisation in gas quality in different countries, it is desirable first to distinguish between those properties which concern delivery of gas to the consumer, and those which, by reason of their chemical composition determine their behaviour in consumers' appliances. Although it is recognised that the acceptance of the Wobbe number alone is by no means strictly applicable to gas supplies in all countries, it is fortunate that it is often practicable to adjust Wobbe number by the simple expedient of air dilution without too much effect on flame characteristics.

This, at least, serves to equalise the properties required to make all gases equivalent as energy carriers. In any large areas of distribution, modifications in pressure and appliance design can be standardised to ensure satisfactory performance on gas of a pre-fixed Wobbe number.

For the examination of gas appliances, proposals are made for the standardisation of test gases (generally mixtures of hydrogen, hydrocarbons, carbon monoxide and nitrogen) having combustion characteristics equivalent to those of the distributed gas as assessed by interchangeability diagrams and test burners.

DISCUSSION

PROFESSOR DR. SCHUSTER (Western Germany), the rapporteur, presented the report, and MR. L. MINCHIN (Great Britain), commenting on it, pointed out that so far various methods for measuring the interchangeability of gases in various countries had been worked out. He thought that the time had come for a combined method which would be accepted internationally.

In each case it had been necessary to find a method in a hurry, and they all suffered from several objections. In the carrying out of these experiments there was always the temptation to produce ideal conditions of flow, that is to say, parabolic flow when in actual practice flow conditions were nearly square.

The British workers in this field had made a plea for mixtures of ideal gases for testing, and he asked how this was done. There appeared to be no information about it in the report.

He stressed some of the difficulties encountered with impure gases.

MR. VAN DER LINDEN (Netherlands) drew attention to various mistakes in the figures quoted for Sweden in the report. On p. 42 the gross c.v. should read 4,600 k cal. per cu.m., and the Wobbe number 7,000. On p. 45, 5870 should read 7.000, and the deviation 5% not 50%.

Professor Schuster, replying, said that the various methods referred to by Mr. Minchin had been compared and he hoped to find a combined method.

Referring to the use of test gases, he said that technically pure gases were used. Experiments began on pure methane, and various quantities of carbon monoxide were added together with various hydrocarbons in varying proportions.

MR. NEILSSON, the President, commented on the extreme importance of this report especially at the present time when new types of gases were continually becoming available for town gas distribution.

SAFETY CONDITIONS

Clearly problems of safety in the use of gas in all types of gas installation are becoming of increasing importance, so a committee was appointed to study the utilisation of gas in all its aspects.

During the early meetings of this committee it was clear that many accidents arose through the faulty use of gas appliances and the presence of unburnt gas. In these latter cases the composition of the gas, especially its carbon monoxide content, was of great importance. A panel of experts was therefore set up to study gas composition, and their findings are included in this report.

Owing to the difficulties in obtaining statistical details of accidents in all participating countries, efforts are being made in a number of countries to develop automatic ignition and protective devices to prevent dangerous conditions arising.

MR. L. W. ANDREW (Great Britain), the rapporteur, said he was deputising for MR. G. E. CURRIER, the Chairman, who was unfortunately ill. He referred to the recommendations of the report on page 7 and pointed out that the number of accidents were relatively small and that similar conditions existed in all countries.

DISCUSSION

MR. K. W. FRANCOMBE (Great Britain) referred to sections 6 and 7 of the report dealing with the effect of carbon monoxide and odorisation respectively.

The curve given showed that by reducing the CO content from 26% to 6%, deaths from gas poisoning had on the average been reduced to 1/10 and in Great Britain to 1/20 of the former cases.

He congratulated the I.G.U. on its investigation. The catalytic methods of CO reduction were the most favoured, but in special cases absorption could be used. The great advantage of the former was the simultaneous reduction

in CS_2, it also increased the CO_2 content and made possible cold enrichment by cheap high c.v. gases.

As gas prices fall, so costs of the process fall. At present a reduction to 5% CO was economic, though at Basel, in Switzerland, this proportion had been reduced to 1% in all town gas distributed in the city.

MR. VAN DEN HEUVEL (Netherlands) said that the report owed much to the great interest taken in it by the O.E.E.C. Committee, which had adopted its recommendations in its report. He considered that this committee's work had been extremely valuable.

Replying, Mr. Andrews pointed out that the curve referred to by Mr. Francombe was quantitative; many thought it was qualitative. It was in fact an invaluable guide. Far more work was needed and automatic ignition would involve further research before it was completely reliable. He emphasised that anyone using the recommendations must read the whole report.

IGU SWEDEN—
'Gas Journal' Abstract

SECTION I

IGU/18-61 A Coal Viscometer.
Paper by J. de Brouwer, Technical Director of S. A. Cokeries du Marly, Belgium.

IGU/30-61 The Thermal Behaviour of Coals at Various Stages of Oxidation.
Paper by G. Malquorié and R. Sersale, of the Institus di Chemica Industriale, University of Napies, Italy.

IGU/19-61 The Present Trends of Coal Gas Production in Belgian Coking Plants.
Paper by A. Verhaegen, Chief Engineer, Research and Construction Evence Coppée S. A. Belgium.

IGU/10-61 Carbonisation of Low Quality Coal and Subsequent Use of Coke in a c.w.g. Plant.
Paper by D. O. Vick, Works Engineer, Brisbane Gas Co. Ltd.., Australia.

IGU/13-61 Carburetted Water Gas Operations in The Australian Gas Light Company.
Paper by Maurice V. Gilbert, Chief Chemist, The Australian Gas Light Company, N.S.W., Australia.

CARBONISATION PRACTICE

MR. H. S. CHEETHAM, Great Britain, presided over this section.

Papers were confined to some aspect of coal carbonisation and it was most unfortunate in many ways that the particular subjects under review met with such little response from the delegates present.

MR. J. DE BROUWER (Belgium) in his paper 'A coal viscometer' described a useful instrument by which a quick estimation can be made of the viscosity of a coal charge the temperature of which has been raised sufficiently for it to have entered the plastic state.

This particular instrument would, it seems, be more applicable to the coking industry than the gas industry. It can, therefore, be of great assistance in the calculation of the degree of viscosity and of the magnitude of expansion pressures to be expected during carbonisation of a variety of coal mixtures, coal and coke mixtures, or coal and iron ore mixtures before charging the coke oven battery.

An indication of the stress on the oven walls can be obtained and so the optimum values for the production of high quality coke can be estimated.

In the course of the short discussion that followed MR. M. S. GASKILL (Great Britain) pointed out that this was an important paper for those concerned with static carbonisation, since it made possible an estimate of the physical characteristics of varying coal charges. That it could supply information beforehand on the wall pressures to be expected was of very great value.

The next paper in this section, 'The thermal behaviour of coals at various stages of oxidation', by Mr. Giovanni Malquorié and Mr. R. Sersale (Italy), described experiments on the thermal behaviour of coals of varying rank undergoing thermal and thermogravimetric analysis.

Each sample had first been submitted to oxidation in a current of air at various temperatures for controlled periods of time. It was found that the degree of oxidation profoundly modified the profile of thermograms. The experiments were carried out by optical observation of polished sections.

This paper is of a very specialised character, so it is not surprising perhaps that there were no contributors to a discussion.

Another paper from Belgium, by Mr. A. Verhaegen, dealt with the present trends of coal gas production in coking plants in that country.

In it, the author examines the structure of the Belgian coking industry and points to its flexibility in plant design with which it has succeeded in equipping itself. In this respect it constitutes a free market.

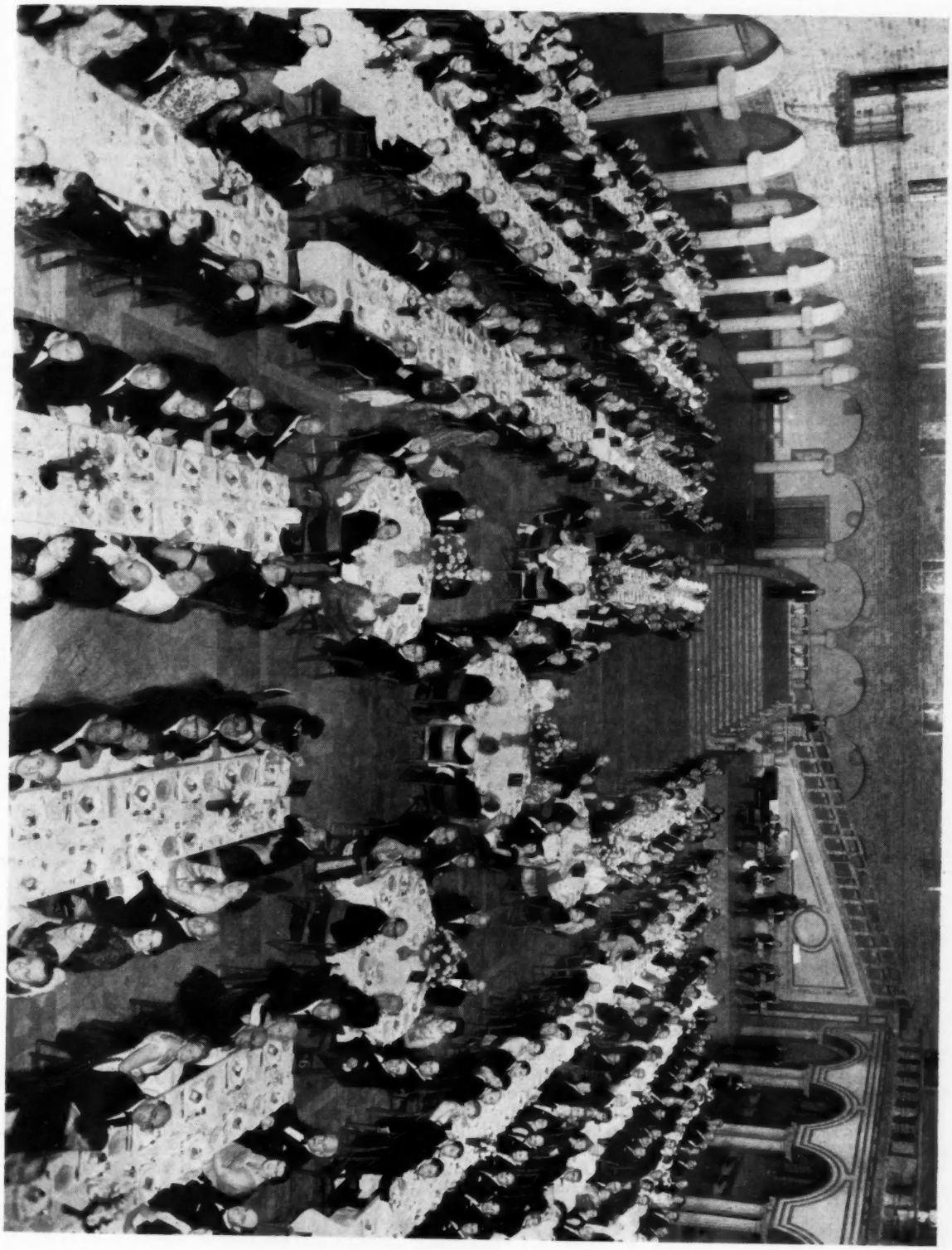
With this in mind he discusses the possible future replacement of existing plant and any factors that might influence renewals when plants are modified or extended. He concludes that there is very little new plant or techniques in his country's coking industry, but progress has been towards improving those already available.

This has been masked, however, by both the coal charged and the heating gas deteriorating in quality.

In the discussion that followed MR. K. W. FRANCOMBE (Great Britain) contrasted the relationships of the gas and coking industries in Great Britain and Belgium and pointed out that only two British gas boards operated coking plants but two others bought up between 60% and 80% of their gas from coking plants outside the industry.

He commented on certain random features, among which were the design of the primary condensers—in both countries the vertical tube type was the most common, but the horizontal gas flow type now common in England was not

The banquet (opposite) at the City Hall. Delegates have just taken their places in the vast Blue Hall. Representatives from Great Britain are seen in the foreground sitting at tables 4, 5, 6. They were also sitting at table 7, just out of the photograph. The effect of an open-air court may be felt from the colonnades on four sides of the hall, the rough red-brick surface of the walls, and the elegant stone staircase leading up to the Golden Salon on the right.



seen on the continent—and the position of the electrostatic detarrer.

In Great Britain it was located down stream of the exhausters. He also commented on the large number of Pelouze tar extractors in Belgium—and the U.S.A.—and expressed some surprise, since this type was completely obsolete in Great Britain.

The Pelouze was located up-stream of the exhauster and would, he presumed, be replaced by the electrostatic type. He considered more tar fog was removed by the British practice.

MR. RASMUSSEN (Denmark) thought that with the electrostatic detarrer before the exhauster there was greater danger from any explosion than if placed after it.

MR. H. D. GREENWOOD (Great Britain) spoke of the tendency towards centralised control of coke oven plants in Great Britain and at one such—presumably the Murton coking plant—manpower had been reduced by 30%. Present developments were for heating the ovens by oil products or by methane recovered from the coal mines.

Uniform quality

In the latter case, air was added to the methane in varying quantities to give a gas for underfiring of uniform quality; most of these developments were going on in the Midlands and South Wales.

The oil products used were l.p.g. or p.f.d., and in this way more coke oven gas become available without having to employ expensive producer gas.

In his reply MR. VERHAEGEN said that Mr. Francombe's points were interesting, but the horizontal tube condenser was easily cleaned. Personally he did not accept either position for the electro-static detarrer as fixed. He thought more tar could be removed before the exhauster than after it. Safety conditions were important, however. The present practice was to place it after the exhauster.

Referring to centralised control, he said this would be pursued in future developments, but at present the most important task was to control remotely coal and coke handling.

He referred to the critical density of each coal or mixture of coals. With the oven heated by gas oil, he had experienced difficulties with pushing, but it would undoubtedly be easier with light feed stocks. There were, however, no such plants in Belgium, but there was plenty of methane there, so it was available if and when required.

From Australia

The two papers that followed both came from Australia, and it was very unfortunate that neither of the authors had been able to travel to Sweden for the conference. As a consequence these two papers were not formally presented.

The first of these, 'Carbonisation of low quality coal and subsequent use of the coke in a carburetted water gas plant,' by MR. D. O. VICK, of the Brisbane Gas Co. Ltd., dealt with the carbonisation of a geologically young coal in a continous vertical retorts plant and a horizontal plant.

The coke produced is small, friable, highly reactive, and has a high ash content of high fusion temperature. When used for manufacturing carburetted water gas, such a coke demands a modification in the operation of the plant as compared to the use of a good quality coke.

Discussing the paper, MR. M. S. GASKILL (Great Britain) referred to section III of the paper—Carbonisation—and said it seemed a very difficult coal indeed, but he was reluctant to criticise any specific points without knowing all the facts.

Referring to carbonising conditions, he said that the control of heating at different heights had not been done: the steaming reaction had been so vigorous that there had been difficulty in controlling the calorific value. The throughput seemed unduly low, and he asked what would be the possible effect of the carrier gas system.

The operation of the producer by steam-induced air would, he thought, have been better controlled if the air had been supplied by a mechanically driven blower with the admission of l.p. steam.

The second paper from Australia, 'Carburetted water gas operations in the Australian Gas Light Company', was by MR. MAURICE V. GILBERTS, the Chief Chemist at the Company's Mortlake works. In it he describes the existing eight Humphreys & Glasgow 2½-mill. cu.ft. per day c.w.g. plants and the new Power-Gas 9-mill. cu.ft. per day plant now undergoing tests.

The operation of these plants is balanced to enable four factors to be met: (a) Gas demand by consumers. (b) The demand for by-products. (c) The continuous control of the interchange of the mixed gas. (d) The provision of enough gas-making plant to meet production requirements in the event of failure of gases purchased from outside.

The paper describes the efforts made to increase the calorific value of the gas from these plants—the declared c.v. had been raised from 511.8 to 556.2 B.t.u. per cu.ft. to make the best use of the effect on the gas industry of the increased availability of refinery products—and their thermal capacity. Added to this, experiments were carried out on the effect of using a non-coking coal for c.w.g. manufacture. The new Power-Gas plant is completely automatic, and incorporates many new features to allow control by one operator and eliminate time lost through ashing or maintenance operations.

DISCUSSION

Opening the discussion, MR. D. P. HAINES (Great Britain), of the Power-Gas Corporation, discussed some of the design features of the No. 9 c.w.g. plant at the Mortlake works. Large ash boxes, he said, were being designed for the chemical industry by the Power-Gas Corporation in the early 1920s; unscreened coke was being gasified, and where well-screened coke was available outputs of 7.5 mill.cu.ft. of gas a day were achieved.

Grates were up to 9 ft. in diameter. For c.w.g. dry grates did not develop as quickly as they might have done, though interest had been shown in them in North and South America since the war.

In the 1950's generators of 11 ft. 6 in. diameter with a capacity of up to 9 mill. cu.ft. per day had been built. At the same time chequerless carburettors were being developed. A feature of the Beckton carburettor was that it was able to trap coarse particles, but its actual performance was not so good because of the tangential entry of the blow gases.

The design of the Mortlake plant had undergone considerable research. Tangential entry had been abandoned, and inertia separators used, as in the early design of chequerless carburettors in the United Kingdom. The study of models had shown where difficulties were to be expected, and these had been met.

With normal purging—with a steam purge of 2 seconds duration—a nitrogen content of about 5% in the make-gas had been achieved. The grate diameter was the same as at Beckton—14 ft.—and the design was that of the plants of the 1920s; the generator was of the 1929 design.

The cyclic ash discharge was of particular interest and had worked successfully when the ash was well graduated, but difficulties might occur when the ash was difficult to fuse.

He paid tribute to the courage of the Australian company for installing its No. 9 plant at Mortlake, though in

actual fact the designs incorporated in it had been well proven over 40 years.

MR. L. J. CLARK (Great Britain) pointed out that the rôle played by the c.w.g. plant had changed about ten years ago. Larger and larger plants became economically justifiable, but latterly the use of coke for gas-making had become very expensive. Light distillates had been substituted for gas oil, and the amount of coke used had been reduced by from 50% to 33%, and so had restored the value of the plants.

Outputs in the older plants had risen by 25% but only by 10% in the newer plants.

MR. PLUMMER (Australia), speaking for the author, referred to the commissioning tests, and pointed out that so far results exceeded the expected performance; the nitrogen content of the make-gas was very low.

Survey of the Swedish gas industry

WRITING in the monthly journal of the Swedish Gas Association, Mr. Claes Lindgren, a member of the Association and one of the chief organisers of the conference, traced the history of the Swedish gas industry from the middle of the 19th century onwards. Sweden, he stressed, had no natural gas deposits, and because of the great distances between built-up areas there was no long-distance network, and for fossil fuel the country had access mainly to wood and peat, but both coal and petroleum had to be imported.

With 22 gasworks, all owned by the municipalities, the yearly production today was approximately 310 mill. cu.m. of ordinary coal gas with an average heat value of 4,300 kcal. per cu.m., of which about half was made at the Stockholm works. Practically no water gas was produced, but on the other hand there was a certain production of producer gas. Air or producer gas carburetted with light petroleum products such as l.p. gas and virgin naphtha were used to a large extent as peak load gas.

In more recent years petroleum products had become of increasing importance as raw material. Apart from coal being generally sprayed with oil and some gasworks using oil instead of coke or gas for heating the ovens, a more or less complete change over from coal to oil was taking place in several gasworks.

Some 60% of the town gas production was used in industry and trade and for house heating, the rest being consumed by households, mainly for cooking and water heating. Of the approximately 2.4 mill. households in the country about a quarter, or some 600,000, were supplied with gas.

At two oil refineries liquefied petroleum gases were produced. At one of these, the Svenska Skifferoljeaktiebolaget in Kvarntorp, they were obtained as by-products in the extraction of petrol and oil from Swedish shale. Mainly consisting of propane and butane gases generally went under the name of 'gasol,' the production of which now reached about 30,000 tons a year. About two-thirds was used in industry, but in recent years, its use in commerce and household had increased very considerably.

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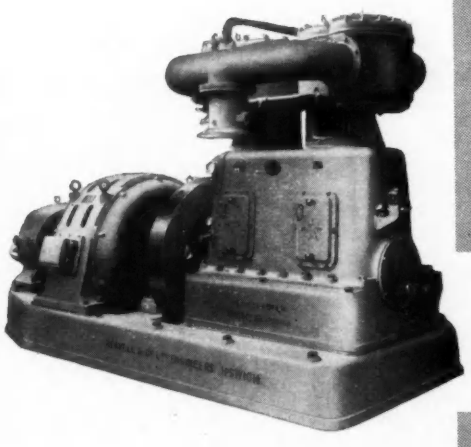

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NEWS SUPPLEMENT

I.G.E. sections are a 'sounding board' says Hodkinson

THE Institution of Gas Engineers and its sections can be an excellent sounding board for the opinions of the men of the gas industry, said Mr. W. Hodkinson, Vice-President of the Institution, at Dudley recently.

Mr. Hodkinson, who was speaking at a lunch held in connection with the Midland Section of the I.G.E. Summer Meeting, said that the 'sounding board should be used to the best advantage'.

He referred to the Chairman of the Midland Section, Mr. F. Harvey's, desire that the Section play an increasing part in the work of the Institution. He was also anxious that the Section should encourage the younger men to come in, present thefr views and accept the cut and thrust of discussion in presenting them.

Mr. Harvey paid tribute to Mr. G. le B. Diamond, Chairman of the West Midlands Gas Board, who retires at the end of July.

Members of the Midland Section visited Pleck gasworks, Walsall, with an alternative trip to South Staffordshire Mond gasworks, in the morning, and the works of Cannon Gas Appliances Ltd. and Accles and Pollock Ltd. in the afternoon. There was a visit to Dudley zoo for the ladies in the morning.

Belgians discuss underground storage

THE Royal Belgian Association of Gas Engineers recently heard a paper on 'The storage of hydrocarbons in clay formations'. The paper, by Professor Kaisin, Professor of Geology at Louvain University, was given at the Annual General Meeting of the Association in Brussels.

It dealt with the theoretical considerations and geological survey leading to the project to provide an underground storage installation at Antwerp for liquid petroleum products such as propane and butane.

The Institution of Gas Engineers was represented at the meeting by the President, Mr. T. C. Battersby, and the Secretary, Mr. A. G. Higgins.

LLANFAIR P.G.? — PIPED GAS, OF COURSE

THE little Welsh village of Llanfairpwllgwyngyllgogerychwyrndrobwllllantysiliogogogoch ('Church of St. Mary, in a hollow of white hazel, near to a rapid whirlpool and to St. Tysilio's Church, near to a red cave'), known the world over for its long name (58 letters, 18 syllables), keeps pace with the times.

According to its English translation the name suggests that inhabitants of the village seem to have been near various amenities for a very long time.

They are, however, villagers who, until recently, have not known the nearness, warmth and convenience of a gas supply. Now, because of the construction of the North Wales grid by the Wales Gas Board, some of them are to have the fuel of their choice.

Forty houses now being built will be supplied by a direct tapping from the grid. Supplies to others will surely follow.

So perhaps the abbreviated name Llanfair P.G. will take on a new meaning—Llanfair Piped Gas—for its residents will be able to draw upon the wealth of the hidden stream of harnessed power that flows through the grid from Wrexham, Shotton and Point of Ayr in the East to Holyhead in the West.

The photograph shows how the railway station, where Prince Philip alighted when he officially inaugurated the North Wales grid in November, 1957, deals with the problem of accommodating so long a name.

South-Western I.G.E. members see new plant at Exeter

A VISIT by 80 members of the South Western Section of the I.G.E. to the South Western Gas Board's Exeter manufacturing station, where the new Appleby-Frodingham desulphurising plant was under construction, was followed by a General Meeting at Exeter.

The meeting was presided over by the Chairman of the Section, Mr. T. W. Jackson.

Congratulations were extended to Mr. K. G. Eccleshare and Mr. C. H. Hirst on being awarded the I.G.E. Silver Medal for their paper 'Recent Industrial Gas Developments in the South West'.

Mr. S. F. Tucker and Mr. H. E. J. Hardman, both Associates of the Institution of Gas Engineers, were elected members of the Section.

Mr. L. Baldwin, Works Engineer and Manager, South Western Gas Board, Exeter, introduced a paper on the Appleby-Frodingham desulphurisation plant.

The Chairman introduced Mr. R. Pratt, Distribution Engineer, Cheltenham/Gloucester Districts, South Western Gas Board, who presented his paper on the underwater crossing of the River Severn entitled 'Twin 10-in. Diameter Submarine Gas Main under the River Severn'. The paper was preceded by two films on the incident.

The Power-Gas Corporation Ltd., is installing equipment at a high purity hydrogen plant at Warrington owned by Laporte Chemicals Ltd., to increase the production of hydrogen by 50%. The Power-Gas Corporation built the plant in 1958. The process was based on the continuous catalytic reforming of butane with steam, and the plant formed part of the new hydrogen peroxide installation. It is planned to bring the extension into commission this summer.

USE OF GAS IN HOSPITALS

THE latest developments in the use of gas in hospitals, clinics, nurses' homes and consulting rooms, have been shown on the Gas Council's two Stands at the International Hospital Equipment and Medical Services Exhibition at Olympia, London recently. The main features have been space and water heating, cooking, sterilising and refrigeration facilities.

One special feature has been the cooker designed for the handicapped person. Made by Sidney Flavel & Co. Ltd., the G.C.1 and G.C.2 gas cookers make life easier for the infirm and physically handicapped.

PERSONAL NOTES

MR. SAM HALL, Northern sales director of Thomas Glover and Co. Ltd., has retired after 41 years in the gas industry and 26 years with the Company. Shortly after the First World War, Mr. Hall was appointed sales superintendent to the Edinburgh Corporation gas department. In June, 1923, he founded the Scottish Sales Circle of which he became the honorary secretary. In 1925 Mr. Hall joined Thomas Glover and Co. Ltd. as their Scottish representative, and was later appointed Northern sales manager. In 1951 Mr. Hall was elected to the Board of the Company and appointed sales director. MR. J. P. SMITH, formerly sales director of the Company, has been appointed Director and General Manager of the Meter Division. MR. D. A. SIME has been appointed Sales Director of the Company. He first joined Thomas Glover and Co. Ltd. in 1950, and was elected to the Board in 1951. MR. J. M. SCOTT has been appointed to the Board of the Company. He joined Glover and Main Ltd. as Financial Accountant in 1955.

MR. J. W. RODGERS, Sales and Service Officer of the North Western Gas Board, has been elected Chairman of the North West Divisional Council of the Clean Air Society. He takes over the two-year appointment from MR. S. N. DUGUID. Mr. Rodgers has served the gas industry for 35 years and for the past ten years has been a member of the Divisional Council of the Clean Air Society.

MR. A. A. DUNFORD has been appointed Senior Industrial and Commercial Representative in the Southern Gas Board's Southampton Region. Mr. Dunford, aged 29 years, began his career with the North Thames Gas Board. For the past year he has been industrial engineer of the Edinburgh and South Eastern Division of the Scottish Gas Board.

ALDERMAN G. E. HODGKINSON, O.B.E., of Coventry, has been re-appointed a part-time member of the West Midlands Gas Board.

ALDERMAN W. D. CHISHOLM, of Middleton, Lancashire, has been appointed a member of the North Western Gas Consultative Council.

MR. C. H. LEACH, Chairman of the Southern Gas Board, has been admitted as an Officer (Brother) of the Order of St. John. The news comes at the time Mr. Leach has relinquished his appointment as County Director of the St. John Ambulance Association for the County of Hampshire in anticipation of his move from the Southern Gas Board to the West Midlands Gas Board. He is being succeeded in this office by his successor as Chairman of the Southern Gas Board, MR. A. F. HETHERINGTON.

MR. R. M. BRADBURN, of Bebington, Cheshire, has been re-appointed Chairman of the North Western Gas Consultative Council. By virtue of this office, he will continue as a part-time member of the North Western Gas Board.

MR. P. P. RICHBELL has been appointed Solicitor to the South Eastern Gas Board in succession to MR. G. L. MAY, who becomes Secretary to the Board. He will take up his duties on August 1. Mr. Richbell entered the Board's service in 1953 as a graduate trainee. In 1954 he was articled to the Board's Solicitor and was admitted as a Solicitor in April, 1957. He was appointed assistant solicitor in 1959 having held the office of legal assistant since qualifying.

MR. S. W. G. MEDDICK, Mains and Services Inspector on the staff of the Distribution Engineer, Sydney Wharf, Bath, has been awarded the Queen's Commendation for brave conduct in the floods which hit the city last December. On the night of December 4, Mr. Meddick jumped into the flood water at Batheaston and had to submerge completely to get into the governor kiosk to shut off two valves.

MR. A. D. THOMSON has been appointed Deputy Managing Director of Edwin Danks & Co. (Oldbury) Ltd. MR. C. H. G. HAYWARD, General Manager of the Combustion Division, and MR. H. HARDING SMITH, General Sales Manager, Edwin Danks & Co. (Oldbury) Ltd., have been appointed Directors on the Board of that Company.

COUNCILLOR MRS. G. BRAY, of Leeds, has been appointed a member of the North Eastern Gas Consultative Council.

A.P.V. record sales and profits

THE recovery in markets, which had begun to show itself in the latter part of 1959, continued throughout 1960, during which year the intake of orders was at a record level, says a statement by the Chairman, Mr. W. E. Jenkins, C.B.E., The A.P.V. Co., Ltd. The 51st annual general meeting was held recently at Crawley.

The statement read: 'While some of the most valuable home contracts came from the chemical industry, we continued to receive important orders for our standard equipment not only from this industry but also for dairies, breweries, and food plants.

Export activities

'Once again our export activities were most successful, and approximately one half of our orders came from overseas. This I regard as a satisfactory reward for the redoubled efforts which your Company has made in recent years to support the country's export trade.

'The Group profits before provision for tax amounted to £750,235, an increase of £254,342 over 1959. This result is the best in the history of the Company and it will be seen from the undernoted figures that the trend over the past four years has been satisfactory: Group Profits before Tax: 1957, £222,255; 1958, £368,599; 1959, £495,893; 1960, £750,235.

Dividends

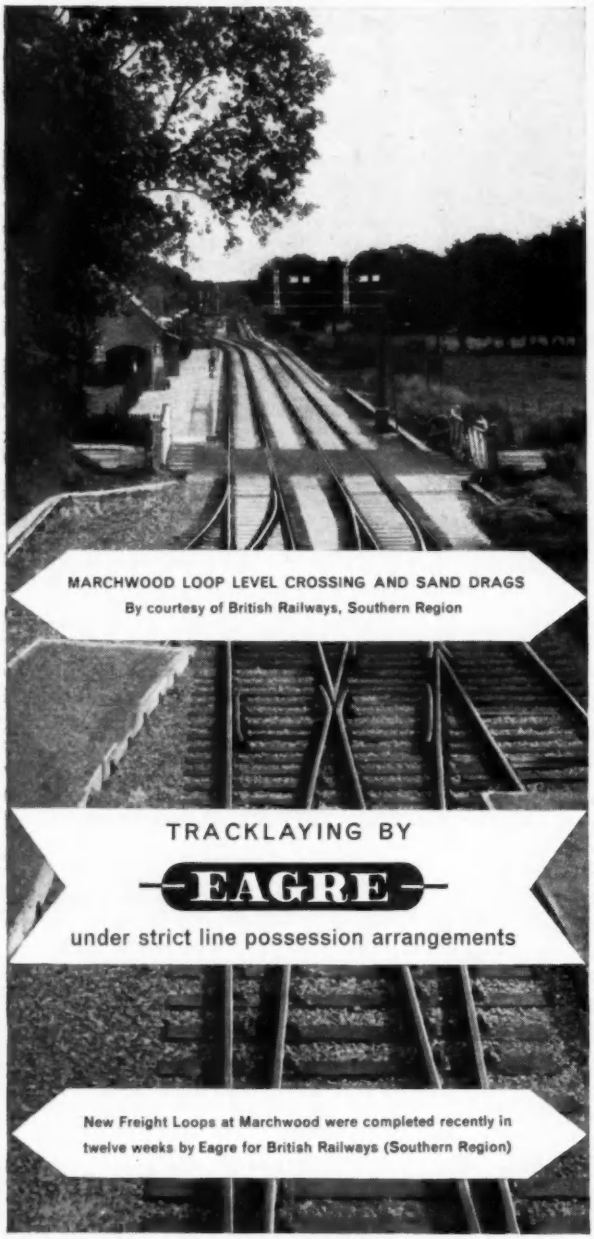
'The profit after tax increased from £243,944 to £350,151 and, in view of the excellent figures disclosed in the accounts, the board is recommending a dividend of 11¼%, less tax, on the ordinary share capital.

'The improvement in the year's results was due to an increase of 11% in Group turnover at £7.1 mill., to greater productivity largely as the result of the introduction of new and better machines, and to increased efficiency in all departments.'

UNDERGROUND GASIFICATION

THE Minister of Power, Mr. Richard Wood, has been asked in the Commons if he will appoint a committee to consider and report upon the mining of coal under built-up areas; and if he will include in the terms of reference a direction to report upon the feasibility of extracting gas from the coal measures under towns and cities without mining the coal.

Mr. Wood said he had decided that there would be no advantage in appointing a committee to consider matters for which existing legislation appeared to make reasonable provision.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